

Application No. 10/715,946
Amdt. dated September 30, 2004
Reply to Office Action of September 16, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1. (currently amended) A grinding tool for use with an endoscope for blending a defect on a turbine blade inside a casing having an observation port, said grinding tool comprising:

a base unit having a trigger;

a support tube extending forwardly from said base unit and being sized to fit through said observation port in said casing;

an extension member hingedly connected to said support tube and operatively coupled to said trigger, wherein said trigger is used to change the position of said extension member;

a reciprocating piston located at least partially in said extension member; and

a grinding head coupled to said reciprocating piston extension member.

Claim 2. (original) The grinding tool of claim 1 wherein said grinding head reciprocates upon activation.

Claim 3. (currently amended) The grinding tool of claim 2 further comprising a motorized driver for reciprocating said piston wherein said grinding head rotates upon activation.

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Claim 4. (original) The grinding tool of claim 1 wherein said support tube has an opening therethrough.

Claim 5. (currently amended) The grinding tool of claim 1 further comprising a spring surrounding a portion of the piston extending between said grinding head and said extension member.

Claim 6. (currently amended) A grinding tool for blending a defect on a turbine blade, said grinding tool comprising:

a base;
a support tube extending forwardly from said base, said support tube having a first portion and a second portion fixed at an angle relative to said first portion; and
a reciprocating grinding head coupled to a piston at least partially located in said second portion of said support tube which is activated by an air source.

Claim 7. (original) The grinding tool of claim 6 further comprising a trigger connected to said base, said trigger being operatively coupled to said second portion of said support tube so that movement of said trigger causes movement of said second portion of said support tube.

Claim 8. (original) The grinding tool of claim 6 wherein said second portion of said support tube is hingedly connected to said first portion of said support tube.

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Claim 9. (currently amended) A grinding tool for use with an endoscope for blending a defect on a turbine blade inside a casing having an observation port, said grinding tool comprising:

a base unit;

a support tube extending forwardly from said base unit and being sized to fit through said observation port in said casing, said support tube having an opening therethrough at a forward end of said support tube through which a portion of said endoscope may pass;

an extension member hingedly connected to said support tube and operatively coupled to said base unit;

means to change the position of said extension member;

a reciprocating piston located at least partially in said extension member; and

a grinding head coupled to said reciprocating piston extension member.

Claim 10. (original) The grinding tool of claim 9 wherein said grinding head reciprocates upon activation.

Claim 11. (currently amended) The grinding tool of claim 9 wherein said grinding head reciprocates via a mechanical driver rotates upon activation.

Claim 12. (currently amended) An apparatus for use with an endoscope for blending a defect on a turbine blade located in a casing having an observation port, said apparatus comprising:

an air supply;

a grinding tool operatively coupled to said air supply, said grinding tool comprising a base unit having a trigger;

a support tube extending forwardly from said base unit, said support tube having an opening therethrough at a forward end of said support tube, said endoscope being able to pass through said support tube and out said opening in said support tube;

an extension member hingedly connected to said support tube and operatively coupled to said trigger, wherein said trigger is used to change the position of said extension member; and

a grinding head coupled to a reciprocating piston at least partially in said extension member, wherein said grinding head is reciprocated via air pulses from said air supply.

Claim 13. (original) The apparatus of claim 12 wherein the frequency of said air pulses may be varied to change the speed of the reciprocation of the grinding head.

Claim 14. (original) The apparatus of claim 12 wherein said air supply is coupled to said base unit of said grinding tool via an air supply line.

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Claim 15. (original) In combination, a grinding tool and an endoscope for blending a defect on a

turbine blade inside a casing having an observation port, said combination comprising:

a grinding tool having a base unit including a trigger;

a support tube extending forwardly from said base unit, said support tube having an opening therethrough;

an extension member hingedly connected to said support tube and operatively coupled to said trigger, wherein said trigger is used to change the position of said extension member;

a reciprocating piston located in said extension member;

a grinding head coupled to said piston; and

an endoscope having a portion extending through said support tube of said grinding tool and out said opening in said support tube.

Claim 16. (original) The combination of claim 15 wherein said piston reciprocates in response to air pulses from an air supply.

Claim 17. (original) The combination of claim 15 further comprising a spring surrounding a portion of said piston.

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Claim 18. (currently amended) A method of blending a defect on a turbine blade inside a casing having an observation port with a grinding apparatus including a grinding tool, an endoscope and an air supply, said method comprising:

providing a grinding tool comprising a base and trigger connected to said base, a support tube extending forwardly from said base, said support tube having an opening therethrough at a forward end of said support tube, an extension member hingedly connected to said support tube and operatively coupled to said trigger, wherein said trigger is used to change the position of said extension member, a piston at least partially in said extension member and a grinding head coupled to said piston extension member;

passing a portion of said endoscope through said support tube of said grinding tool and out said opening in said support tube;

passing said support tube through said observation port in said casing;
locating said defect on said turbine blade with said endoscope;
positioning said grinding head proximate said defect on said turbine blade; and
activating said air supply to supply air pulses to reciprocate said piston and said grinding head.

Claim 19. (original) The method of claim 18 wherein positioning said grinding head proximate said defect on said turbine blade comprises moving said extension member of said grinding tool via said trigger.

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Claim 20. (original) A method of blending a defect on a turbine blade inside a casing having an observation port with a grinding apparatus including a grinding tool, an endoscope and a air supply, said method comprising:

providing a grinding tool comprising a support tube extending forwardly from a base, a piston adapted to move in said support tube and a grinding head secured to said piston;

passing a portion of said endoscope through said support tube of said grinding tool and out an opening in said support tube;

passing said support tube and portion of said endoscope through said observation port in said casing;

locating said defect on said turbine blade using said endoscope;

positioning said grinding head proximate said defect on said turbine blade; and

supplying air pulses from said air supply to reciprocate said grinding head.

Claim 21. (original) The method of claim 20 wherein said air pulses pass through an air supply tube operatively coupled to said grinding tool.

Claim 22. (original) The method of claim 20 wherein positioning said grinding head proximate said defect on said turbine blade comprises moving a portion of said support tube of said grinding tool via a trigger on said grinding tool.

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Claim 23. (original) A method of blending a defect on a turbine blade inside a casing having an observation port with a grinding apparatus including a grinding tool and an endoscope, said method comprising:

providing a grinding tool comprising a base, and a trigger connected to said base, a support tube extending forwardly from said base, said support tube having an opening therethrough at a forward end of said support tube, an extension member hingedly connected to said support tube and operatively coupled to said trigger, wherein said trigger is used to change the position of said extension member and a grinding head coupled to said extension member;

passing said support tube and a portion of said endoscope through said observation port in said casing;

locating said defect on said turbine blade using said endoscope;

positioning said grinding head proximate said defect on said turbine blade; and

supplying fluid to reciprocate said grinding head.

Claim 24. (original) The method of claim 23 wherein positioning said grinding head proximate said defect on said turbine blade comprises moving said extension member of said grinding tool via said trigger.

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Claim 25. (original) A method of blending a defect on a turbine blade inside a casing having an observation port with a grinding apparatus including a grinding tool and an endoscope, said method comprising:

providing a grinding tool comprising a base unit having a trigger, a support tube extending forwardly from said base unit, said support tube having a first portion and a second portion operatively coupled to said trigger;

adjusting the position of said second portion of said support tube relative to said first portion of said support tube;

passing said second portion of said support tube through said observation port in said casing; locating said defect on said turbine blade; positioning said grinding head proximate said defect on said turbine blade; and reciprocating said grinding head.

Claim 26. (original) The method of claim 25 wherein positioning said grinding head proximate said defect on said turbine blade comprises moving said second portion of said support tube with said trigger.